

CLAIMS:

1. An illumination system comprising:
 - a. a light source;
 - b. a light-directing assembly in close proximity to the light source and comprising a plurality of microprisms, each microprism comprising an input surface that admits light radiating from the light source, an output surface distal from and parallel to the input surface, and at least one sidewall disposed between and contiguous with the input and output surfaces and forming an obtuse tilt angle with respect to the input surface and further positioned for effecting total reflection of the light rays received by the input surface, the sidewalls of the microprisms defining interstitial regions between the microprisms;
- 10 c. at least one blocking means positioned to block the passage of light through the sidewalls; and
- d. an optical means located between the light source and the light-directing assembly, characterized in that
- e. said optical means comprise a reflective powder to at least substantially shield the blocking means from direct exposure to light radiated from the light source.
2. An illumination system according to claim 1, wherein the reflective powder is a diffuse reflective powder.
- 20 3. An illumination system according to claim 2, wherein said powder comprises calcium halophosphate, calcium pyrophosphate, BaSO₄, MgO, YBO₃, TiO₂ or Al₂O₃ particles.
4. An illumination system according to claim 3, wherein the particles have an average diameter ranging between 0.1 and 100 μm , in particular 5 to 20 μm .
- 25 5. An illumination system according to claim 3 or 4, wherein said particles are mixed with fine-grained Al₂O₃ particles having an average diameter which ranges between 10 and 50 nm.

6. An illumination system according to claim 5, wherein the amount of fine-grained Al_2O_3 particles having an average diameter ranging between 10 and 50 nm ranges between 0.1 and 5 wt.%, in particular 0.5 to 3 wt.%.

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7. An illumination system according to any one of the preceding claims 1 - 6, wherein said powder is mixed with colour pigments.

8. An illumination system according to any one of the preceding claims 1 - 7, wherein said
10 powder is a "free-flowing" type powder.

9. An illumination system according to any one of the preceding claims 1 - 8, wherein the powder at least is incapable of absorbing light, in particular light having a wavelength in the visible wavelength range.

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10. An illumination system according to any of the preceding claims 1-9, wherein said blocking means is provided on a surface directly adjacent to the sidewalls of neighbouring microprisms.

20 11. An illumination system according to claim 10, wherein said blocking means comprises a black-absorbing layer or a metal layer, preferably selected from the group formed by Al and Ag.

12. An illumination system according to any of the preceding claims 1-9, wherein
25 said blocking means is provided on the sidewalls of the microprisms.

13. An illumination system according to claim 12, wherein said blocking means comprises a metal layer, preferably selected from the group formed by Al and Ag.

30 14. An illumination system according to claim 12 or 13, wherein said powder is contained in the interstitial regions between the microprisms.

15. An illumination system according to any of the preceding claims 1 – 13, wherein said powder is contained in a series of reflector elements supported by a base plate at

least substantially extending in parallel with the light - directing assembly and wherein each element is positioned centrally underneath a corresponding interstitial region between adjacent microprisms.

5 16. An illumination system according to claim 15, wherein the area of each reflector element facing the light source corresponds to the projected cross-section area of a corresponding interstitial region facing the light source, the projection carried out on an imaginary plane extending in parallel with the light-directing assembly at the location of and containing the input surfaces.

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17. An illumination system according to any of the preceding claims 1-16, wherein the width of the interstitial regions is at least 1 mm and wherein the height thereof is at least 1mm.